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ABSTRACT

The purpose of this study was to determine the relationship between nutritional knowledge and eating habits of college students. Data were collected from 1,930 college juniors and seniors on 69 college and university campuses in 25 states. The students were members of the national home economics honor society and non-home economics students, male and female. Significant differences in eating habits were found to exist among the experiment groups, but the findings did not support a relationship between knowledge of nutrition and adequacy of diet. It is proposed that an experimental program be devised and tested to compare with the traditional approach to nutritional education, because the study's findings raise questions about present nutrition education methods. (HSE)

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THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE AND EATING HABITS OF SELECTED COLLEGE STUDENTS

A National Study Sponsored Jointly by

Kappa Omicron Phi, National Home Economics Honor Society

and

The University of Mississippi

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THE RELATIONSHIP BETWEEN NUTRITIONAL KNOWLEDGE AND EATING HABITS OF SELECTED COLLEGE STUDENTS

This study was initiated at the direction of the National Council of Kappa Omicron Phi (KOØ), National Home Economics Honor Society, for the purposes of encouraging KOØ members to appreciate the role of research in home economics and to gain knowledge about the research process. One aspect of the national program theme for 1975-77 was entitled, "Today's Preparation---Tomorrow's Professional." Several subthemes pertaining to food and nutrition influenced the decision to implement this study. Participation in this research was a requirement of collegiate chapters as a part of the national annual project.

For millions of people the most pressing problem is obtaining enough food to stay alive. To alleviate some of the problem, national and international programs have been initiated to increase the availability of food, supplement incomes of low-income families, and provide meals for children. In addition, an effort has been made to increase knowledge about nutrition, sanitation, and food preparation methods to preserve nutrients. This project entertained the question, "How successful have educational efforts been with college students?"

It is commonly assumed that knowledge of facts will be reflected in the behavior of individuals. If this is true, persons who have been exposed to nutrition education should have better eating habits than those who have little or no such knowledge. Thus, it might be assumed that home economics majors, specifically members of a home economics honor society, should have greater knowledge about nutrition and exhibit eating habits that rate higher when subjected to a nutritional evaluation than non-home economics majors.

This study was designed to determine the relationship between nutritional knowledge and eating habits of college students. In addition, the study investigated

1. The adequacy of the diets of college students;
2. The adequacy of students' diets in relation to their knowledge of nutrition;
3. The source of students' nutrition education;
4. The adequacy of diets of KOØ students in comparison to the diets of non-home economics females;
5. The adequacy of diets of KOØ students in comparison to the diets of non-home economics males;
6. The adequacy of the diets of non-home economics female students in comparison with the diets of non-home economics male students.

Description of the Sample and Research Design

The subjects for this study were 717 members (predominately female) of Kappa Omicron Phi, 530 non-home economics males, and 682 non-home economics females from 67 campuses participating in the study. This represented 92 percent of eligible Kappa Omicron Phi chapters and 70 percent of the active membership.

During the month of February 1977, KOØ members of junior and senior classification participated in the study at a special chapter meeting. The sponsors administered the instruments in the following order: Personal Data Form, Twenty-four Hour Food Recall, Nutrition Quiz. Each instrument was collected before the next one was distributed. KOØ members were given two additional sets of the three instruments to collect data from two non-home economics students of the same academic standing: one male, the other female. These instruments were administered to the non-home economics students in the same procedure during the same week. The identity of respondents and chapters were protected through a coding system assigned by and known only to the KOØ Executive Secretary.

After the data were collected from all participating chapters, the food recalls were scored by KOØ members of the Department of Home Economics, The University of Mississippi, under the supervision of the researchers, and other responses were programmed for computer analysis.

Personal Data Form

The Personal Data Form was developed to secure relevant demographic data, the source(s) of nutrition instruction, and other information about eating habits. Questions pertained to sex, age, academic major, place of residence, preparation of meals, availability and patronage of a college/university refrigerator rental service, food items refrigerated, and "special" or modified diets.

Twenty-four Hour Food Recall

The Twenty-four Hour Food Recall instrument was similar in nature to standard forms for securing accurate food intake data. It was structured for the recording of specific food items and approximate amounts comsumed during regular meals and three additional snack times. All items consumed were recorded, including gum, popcorn, alcoholic and non-alcoholic beverages. This instrument was scored by the use of qualitative and quantitative evaluation scale developed for this purpose from "Follow the Food Guide Every Day" (USDA Consumer and Marketing Service, 1966)

Nutrition Quiz

The Nutrition Quiz was developed to determine nutritional knowledge of respondents. The 25 items pertained to knowledge of the

"basic four" food groups, function of nutrients in the body, nutritional value of specific food items, food sources of specific nutrients, food fads, and food preparation methods for retention of nutritive value. The instrument was piloted with foods and nutrition classes at The University of Mississippi and refined by nutritionists in Pennsylvania and Michigan. Content and construct validity were examined, and it was determined the 25-item quiz was representative of all previously stated categories of nutrition facts. The reliability of the instrument was measured by the Kuder-Richardson Formula 20 which produced a coefficient of .86.

Limitations

The Basic Four Food Guide, recognized by various authorities as a guide for planning daily food intake, is limited because it does not measure the vitamin and mineral content of food consumed. The sample, limited to campuses on which a KOØ chapter was located, was not totally representative of college students in general. Furthermore, the sample was a study of upper division undergraduate students of junior/senior standing. The students' knowledge of nutrition was based solely on the results of a single, newly developed nutrition quiz. The effort to protect the identity of respondents and chapters resulted in only broad generalizations and implications from the findings.

Results Related to Hypotheses

Three hypotheses were tested in this study. The first related to nutritional knowledge, the second to dietary adequacy, and the third to the relationship between adequacy of diet and knowledge of nutrition.

Null Hypothesis 1

No significant differences exist among the three groups as to their nutritional knowledge.

This hypothesis was tested by the use of Analysis of Variance, single classification using Scheffe's post hoc comparisons. Based on 25 possible points the mean Nutrition Quiz score for KOØ members was 18.2; for non-home economics females 13.5; for non-home economics males 12.8; and for all students 15.1. The distribution of nutrition test scores for all students was slightly skewed to the left, as verified by the Chi-square Goodness of Fit test. The deviation was not enough to prohibit use of Analysis of Variance. KOØ members scored significantly higher at the .001 level than either of the other two groups on the Nutrition Quiz. The non-home economics females scored significantly higher ($p < .05$) than the non-home economics males. Thus, this hypothesis was rejected.

Null Hypothesis 2

No significant differences exist among the three groups as to their dietary adequacy.

This hypothesis was tested by the use of Analysis of Variance, single classification using Scheffe's post hoc comparisons. Based on 100 possible points the mean score for all students on the Twenty-four Hour Food Recall was 70.6. The non-home economics males scored highest at 75.5, followed by KOØ members at 70.3, and non-home economics females at 67.1. The hypothesis was rejected because non-home economics males scored significantly higher ($p < .001$) than either of the other two groups on the Twenty-four Hour Food Recall. KOØ members scored significantly higher than non-home economics females at the .01 level.

Null Hypothesis 3

No significant relationship exists between adequacy of diet and knowledge of nutrition for the three groups.

This hypothesis was tested by the use of Pearson product moment correlation coefficient. No significant relationship existed between adequacy of diet and knowledge of nutrition for any of the three groups. The correlation coefficients ranged from .07 to .10. Thus the hypothesis was accepted.

Additional Findings

In addition to data related to the hypotheses, other data were examined for potential implications for nutrition education. These additional findings are discussed below.

Nutrition Quiz

Sixty-one percent of the students correctly answered from 11-19 questions; 15 percent, 6-10; and 20.7 percent, 20-24. Three percent answered 5 or fewer correctly, and 0.3 percent answered all 25 items correctly.

Question number 7 was answered correctly most frequently by all students (93 percent). The question most frequently missed by the students as a whole was number 13 (72 percent). The most frequently missed question by KOØ members was number 22 (58 percent); by non-home economics females, number 13 (83 percent); and by non-home economics males, number 13 (80 percent).

Twenty-four Hour Food Recall

When scores on each of the four basic food groups were compared, the highest mean score (20.4) for all students was on bread and cereal intake, followed by a meat score of 20.0; fruits and vegetables at 15.5; and milk at 14.8. Scores for both the KOØ members and non-home economics females ranked from high to low as follows: bread and cereal, meat, fruit and vegetables, and milk. The top ranking score for non-home economics males was meat, followed in order by bread and cereal, milk, and fruits and vegetables.

Correlation between Scores

Although the data showed no significant relationship between adequacy of diet and knowledge of nutrition for any of the three groups, there were some intrarelationships within the basic four food groups. An adequate milk intake seemed to be related to an adequate intake of bread and cereals for all groups, as well as to a high dietary score. For the non-home economics males, milk adequacy seemed to relate to a high quiz score, although this was not true for the other groups. Both the KOØ members and non-home economics females showed a relationship between high meat and high fruit - vegetables scores. For all groups, meat showed a positive relationship with bread and cereal intake, as well as with a high dietary score.

Academic Major

Since KOØ members were predominately home economics majors, only the non-home economics students were asked to indicate majors. The largest percentage of males (11) and females (28) were education majors, and social science ranked next as specified by nearly 10 percent of the females and 9 percent of the males.

Place of Residence

The largest percentage of all students (43) lived in dormitories with 26 percent living in off-campus apartments. Fifty-two percent of non-home economics females lived in dormitories and 23 percent lived in off-campus apartments. Among the non-home economics males, 35 percent lived in off-campus apartments, while 31 percent lived in dormitories.

Meal Preparation

Approximately three-fourths (71 percent) of all students prepared meals wherever they lived. Snacks were prepared by 57 percent, dinner or supper by 53 percent, breakfast by 43 percent, and lunch by 43 percent.

Source of Nutrition Instruction

Forty-two percent of all students studied foods and nutrition in college, and 31 percent indicated similar instruction in senior high

school with 22 percent in junior high school. In senior high school, health classes provided such instruction for 33 percent and physical education for 20 percent. For non-home economics students, senior high health classes provided nutrition instruction for 37 percent of the females and 36 percent of the males. Six percent of the KOØ members did not study nutrition in college.

Refrigerator Usage

Nearly three-fourths (71 percent) of the students indicated that the university offered refrigerator rental service, although only 17 percent used the service. However, 33 percent thought they would eat better if the service was offered without charge.

The food item most frequently kept in the refrigerator was fruits according to 70 percent of all students; the item most frequently stored by non-home economics males was milk (69 percent). Other popular foods included: cheese (69 percent), soft drinks (53 percent), and eggs (52 percent).

Special or Modified Diet

Ten percent of all students reported being on a special or modified diet, although the percentage of non-home economics males (5) was lower. More non-home economics females (14 percent) than KOØ members (12 percent) seemed diet conscious. Among all students, only about 3 percent indicated doctors had prescribed the diet. Fourteen percent of all students prescribed their own diets, with the largest percentage (17) among non-home economics females. Both the KOØ members and non-home economics males were lower in self-diet prescription.

Discussion

Since there were significant differences between means of the three groups in regard to nutritional knowledge and dietary adequacy, two null hypotheses were rejected. The Nutrition Quiz and the Twenty-four Hour Food Recall served as criteria for determining the effectiveness of nutritional instruction and the status of eating behavior. The findings of this study did not suport a relationship between knowledge of nutrition and adequacy of diet.

Several explanations of the data should be considered: (1) KOØ members could be expected to score higher on the Nutrition Quiz since most of them had studied nutrition in college (94 percent) as compared with non-home economics females (16 percent) and non-home economics males (6 percent). (2) Non-home economics females could be expected to score higher on the Nutrition Quiz than non-home economics males because a higher percentage studied nutrition in all sources of instruction. Comparative data are summarized in Table 1.

(3) In the course of a normal day males tend to consume more food, both in kind and amount, than females who are more weight conscious. This could account for the fact that the diets of non-home economics males were better than KOØ members and non-home economics females. It is encouraging to note that KOØ members' diets were significantly better (71) than non-home economics females (67).

Table 1. Summary of Source of Nutrition Instruction

Source of Nutrition Instruction	Non-Home Economics	
	females*	males*
Senior High Health	37	36
College Health	20	17
Junior High Foods & Nutrition	26	7
Senior High Foods & Nutrition	27	5
College Foods & Nutrition	16	6

*Percentage

Implications and Recommendations

The findings of this study raise questions about present nutrition education methods and suggest the need for expert help to consider the implications and recommend new and/or different educational strategies. One approach would be to invite top nutritionists and nutrition educators to participate in a conference for the purpose of exploring alternatives.

The study further suggests that the traditional informational approach to changing eating behaviors is inadequate and that information alone does not bring about behavioral changes. Since changed behavior is ultimately a function of changed attitudes, a balanced approach of cognitive, affective, and behavioral strategies is proposed. An experimental program could be designed and tested to compare with the traditional cognitive approach.

Dr. Norman[1] relates the influence of society, personality, and culture to eating behavior and suggests that these should be incorporated into nutrition education methods in an effort to make nutrition information individually relevant.

The relatively high degree of validity and reliability of the Nutrition Quiz supports other possible uses for this instrument. This quiz may serve a useful function as a pretest/posttest instrument for high school, non-major college, and adult students.

[1]Ruth E. Norman, "Ideas for Teaching Nutrition." Journal of Home Economics, September, 1977, pp. 44-46.

The design of the study and instruments may be appropriate for other societal groups where a concern for adequacy of diet and nutritional knowledge exists. Possible groups include: older or retired persons, middle age adults, adolescents, and upper elementary children.

The researchers conclude that a re-examination of nutrition education could be the most important outcome of this study.

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